

SECTION 8: MONITORING

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8.0 MONITORING

Monitoring of the work performed as directed by the VMP completes an important feedback loop by assessing whether or not the management of the Park is meeting the Goals and Objectives laid out in Section 1 of this plan. Management of the vegetation in the Park is accomplished by doing a combination of regular and ongoing maintenance and by implementing specific projects. Monitoring of regular maintenance has to do with making sure that: 1) work is being performed where, when, and how it is supposed to be done; 2) the work being done is having the desired results; and 3) any necessary adjustments are made to the maintenance action(s) in the future if intended goals and objectives are not being met. Monitoring of specific projects has to do with evaluating 1) the success of the project's design 2) the success of the project's implementation. Therefore, monitoring recommendations for ongoing maintenance have been separated from those for projects.

8.1 Maintenance Monitoring

Evaluation of the effectiveness of ongoing and routine maintenance, or measurement of the change over time, should be done by SPMP staff or a designated representative every two years to assess how well vegetation management goals and objectives are being met. Checklists for monitoring of each MA can be found in Section 5 of this Plan. Completed checklists should be reviewed by SPMP staff to identify problems, progress, and the effectiveness of maintenance actions. Information recorded on the checklists is meant to inform and refine ongoing maintenance work and allocation of maintenance resources (personnel, budget, effort priorities). Monitoring is only effective if the results are incorporated into the ongoing management actions in the Park.

8.2 Project Monitoring

Monitoring is an important part of any project because it allows evaluation of the success of a project and therefore the success of the planning and implementation. Problems can be identified as they occur, and appropriate actions can be taken to keep the project on track to meet its goals and objectives. This ultimately improves subsequent projects because they are informed by lessons learned in the past about what works and what doesn't, and why. The collection of measurable data and its documentation in a format that can be understood and accessed by others is the best way to improve project successes in the future.

8.2.1 Natural Area Projects

Monitoring for 3-5 years is recommended for any project in the natural areas of the Park. Development of a monitoring plan should occur when project is being planned. Monitoring plans are site specific because each project has different goals and objectives, and also has different site conditions. Any number of site parameters can be measured and used to evaluate a project, but most of the projects at Sand Point Magnuson Park (SPMP) have to do with removing or controlling invasive species and replacing them with native plants. Therefore, the information most relevant to evaluating success will have to do with measuring how well the installed plants are surviving and growing, and how effectively the invasive species on the site have been removed and controlled. Below is a list of common parameters to measure as part of

a monitoring program. Those that will be the most appropriate to use for a typical planting project at SPMP are marked with an asterisk. In the monitoring plan, some acceptable threshold or standard of performance should be chosen for each parameter. SPMP staff or designated representative with a background in or knowledge of ecological restoration should perform monitoring. Reports should be completed annually and submitted to DPR Urban Forester and to SPMP staff.

Some Required Components of Monitoring Plans

- Clearly stated Goal(s) of the project: a general statement of what result you are trying to achieve

Example:

- 0.5 acres of mixed forest and shrub plant community

- Clearly stated Objectives of project: the more specific description of the goal

Examples:

- Create forest canopy with at least three species, and shrub layer with at least species.
- Create wildlife habitat features for birds and small mammals.

- Performance Standards: must be measurable, quantifiable indicators of performance of the project relative to the stated goals and objectives (is the project doing what you said it would or wanted it to do?), and should relate to baseline of pre-project conditions

Examples:

- **plant species diversity** (minimum # of species)
- **plant survival***: (minimum acceptable at Year 1, Year 3), depends on harshness of site conditions and level of follow-up care but usually something in the range of 60-85%
- **aerial coverage by desirable species (planted and volunteers)***: again depends on the site conditions and planting density but are usually not too high the first year and increase to the third year, usually done by vegetation class/layer (shrub/tree, herbaceous)
- **aerial coverage by non-natives/invasives***: maximum thresholds, depends on species and degree of pre-installation coverage
- **growth of installed plants**: usually just for trees, measured by doing subset of stem diameters of planted trees using calipers
- **soil standards**: % organic content in top 12" (not a very commonly used standard, and hard to measure – need burn test)

- Monitoring Methods: how often, when, what data to collect and how; description of report format; identification of who gets the report and when do they get it

Monitoring should be done once a year during the growing season (usually June or early July is a good time) for 3-5 years, twice a year (May and August) for sites that are anticipated to have more problems or need more care. All reports should

include: a brief project background with the goals, objectives, and performance standards included; summary of the results; assessment of project with regard to performance standards; and a description of any recommended actions.

- Contingency Plan: describe some likely scenarios of what might go wrong, and what contingency actions will be taken to remedy problem

Example:

- Problem = re-invasion by weeds is beyond acceptable threshold
Action Needed = weeding 3 times per month instead of once per month until weeds are under control

8.2.2 Developed Landscape Projects

Monitoring for a minimum of five years is recommended for any project in the developed landscape areas of the Park. As for natural area projects, a monitoring plan should be developed as part of overall project planning, tailored to fit particular project goals and objectives, site conditions, and component tasks involved. Information most relevant to evaluating success of landscape projects in developed areas likewise will include measuring how well installed plants are surviving and growing, and how effectively weeds and invasive species are being controlled. Below is a list of useful parameters to measure, as part of a monitoring program; appropriate thresholds or performance standards should be selected for each parameter used. Horticulturally-knowledgeable DPR/SPMP staff or a designated representative should perform monitoring. Reports should be completed annually and submitted to DPR Urban Forester and to SPMP staff.

Some Required Components of Monitoring Plans

- Clearly stated Goal (s) of the project: a general statement of what result you are trying to achieve

Example:

- “healthy mixed ornamental plantings closely matching arrangement and palette of original 1939 landscape”

- Clearly stated Objectives of project: the more specific description of the goal

Examples:

- Create a sustainable plant community, which embodies historic precedent but eliminates problematic plant varieties.
- Conserve appropriate existing plant material, bed layout and walkways.

- Performance Standards: serve as objective indicators of project performance relative to stated goals and objectives.

Examples:

- **Plant survival:** (minimum acceptable at Year 1, Year 3, Year 5) for developed landscapes should approach 100% for woody shrubs and trees, 85 – 90% for groundcovers and herbaceous plants. Replacement

planting is the usual remedy, since attrition compromises landscape integrity.

- **Ground plane coverage by weeds/invasives:** maximum thresholds, which depend on aggressiveness of species and ease of eradication. In areas being converted from rough to planted, degree of pre-installation coverage affects thresholds at different monitoring intervals; for restored ornamental plantings the presumption is that site preparation will eradicate weeds and invasives as a prerequisite, with a correspondingly high standard post-installation.
- **Invasives encroachment on desirable plants:** degree to which invasives have grown into, through or over desirable woody plants, as percentage covered or infested. For ornamental landscapes, the standard should approach zero tolerance.
- **Growth of installed plants:** for trees, stem diameters of planted trees should be measured using calipers, and annual branch elongation using tape or ruler. Standard will vary by species and planting environment (sun/shade, irrigated/nonirrigated). For shrubs, height and spread - or degree of fill in mass plantings, with standards varying by species.
- **Planting bed condition:** measures such parameters as presence and amount of litter, depth, type and extent of mulch, bed edge maintenance at lawns, and presence of excessively wet or dry soil (indicating irrigation problems).
- **Condition of installed plants:** records whether or not woody plants show evidence of appropriate care or neglect and damage. Observable factors include proper pruning for training and maintenance purposes, according to standards for species or individual specimen, presence and degree of disease, insect infestation or cultural problems (such as over- or underwatering, excess or inadequate light, herbicide damage), visible damage to crown, stem, branches or roots and apparent extent.
- **Monitoring Methods:** how often, when, what data to collect and how; description of report format; who is to receive it when, and how they are expected to use it.

Monitoring should be done once a year during the growing season (for most parameters, July or August is a good time for three years following installation, then at five years, and ideally again at eight. More intensive plant establishment care and related monitoring should segue to a routine maintenance level after 3-5 years. For projects implemented in developed landscape areas, a final monitoring visit can be instructive as to ultimate project success at relative plant maturity. As for natural area projects, all monitoring reports should include: a brief project background with the goals, objectives, and performance standards included; summary of the results; assessment of project with regard to performance standards; and a description of any recommended actions.

- Contingency Plan: describe some likely scenarios of what might go wrong, and what contingency actions will be taken to remedy problem

Example:

- Problem = Plants show signs of severe drought stress.
Action(s) needed = immediately supplying water by hand to replenish soil to depth of 6", monitoring soil moisture weekly for duration of dry season, adjusting irrigation schedule, diagnosing and making necessary system repairs.

It should be noted that some projects will straddle the somewhat arbitrary margin between natural and developed landscape types. Predominantly natural park zones often contain developed landscape areas, and vice versa. It is, in fact, a stated planning goal for Sand Point Magnuson Park that formal and natural landscape elements become integrated over time. Common sense should dictate which parameters to draw upon in assembling an appropriate and effective project monitoring plan.